



TRAINING AND PROMOTION OF THE EUROCODES

Support to the implementation, harmonization and further development of the Eurocodes

H. Gulvanessian, A. Pinto, S. Dimova, G. Tsionis, M. Geradin

FAIR STANDARDS

Code developments and implementation

Workshop on the use of the Eurocodes in the Mediterranean countries

The workshop took place 27-29 of November 2006, Palace Grand Hotel Varese, Italy, aiming at contributing to the objectives of the Euro-Mediterranean Partnership by facilitating the harmonization of the legislative and regulatory frameworks of the Mediterranean Partners with those of the European Union in areas such as standardization of structural design of works and certification of construction products.

The Workshop was participated by representatives of the National Authorities, National Standardization Bodies, Academia and Industry from Algeria, Egypt, Jordan, Lebanon, Morocco, Tunisia and Albania. The opportunities for market access and facilitation of trade offered by the use of the European System for Standardization and Certification for construction were presented. Special attention was paid to the improvement of safety in construction, and particularly to the contribution of the state-of-the art seismic design standards to the earthquake risk mitigation. The Workshop was jointly organized by DG Joint Research Centre and DG ENTR of the European Commission, and NATO (under the NATO "Science for Peace and Security" Programme).

Further information:
<http://elsa.jrc.it/eurocodes2006>

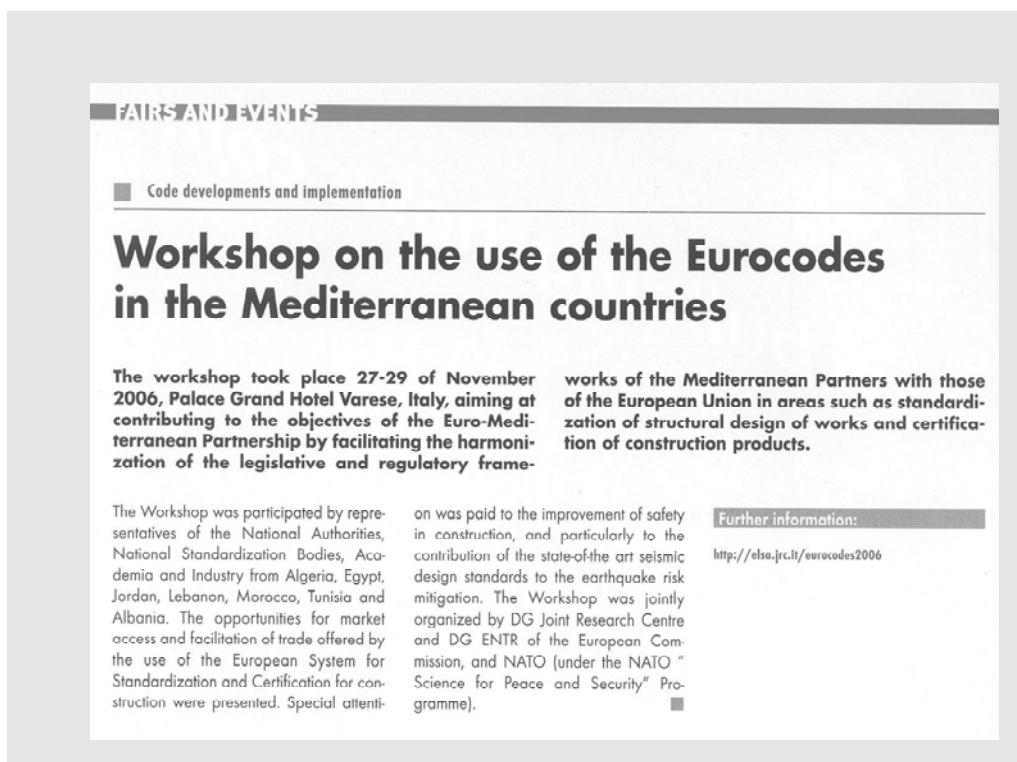
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The work reported is a deliverable within the framework of the Administrative Arrangement between DG ENTR and JRC on support to the implementation, harmonization and further development of the Eurocodes No FIF.2004740 (17.12.2004).

The document was discussed and agreed in the meeting between JRC and CEN/TC250 Chairman's advisory panel on 19 and 20 of January 2006. It was presented at the Eurocodes National Correspondents (ENC) meeting on 20 of February 2006 in Brussels. In order to better reflect and consolidate the views of the different Member States on the National aspects of the training and promotion, the JRC prepared a questionnaire on the principal activities proposed in the paper and sent it to the ENC delegates under a joint cover letter of DG ENTR and JRC. The proposals from the Member States to enhance the EU strategy for training and promotion of the Eurocodes were analyzed and it was decided to make amendments in section 7 "Strategy - Programme of Work" and in Appendix 1 "Activities, target dates and involved Organizations/people". The new version of the document has been sent to DG ENTR for distribution among the Eurocodes National Correspondents Group before its meeting on March 6, 2007.

The contribution of the CEN/TC250 Chairman's advisory panel and of ENC delegates to the discussion and consolidation of the document is highly appreciated.

Summary

This report provides a strategic plan for training and promotion in the context of the Administrative Arrangement between the Enterprise and Industry Directorate General (DG ENTR) and the Joint Research Centre (JRC) of the European Commission regarding the support to the implementation, harmonization and further development of the Eurocodes.

To achieve the Strategy this report recommends the following activities:

- Awareness campaign,
- Education, training and continuing professional development,
- Promotional and technical guidance materials.

In working up the plan the paper gives the following information:

- Principal objectives of the Eurocodes in relation to EU legislation,
- Commission Recommendation to Member States on Implementation,
- Objectives and Reasons for Promotion, where the report recognises that the principal objective of promotion and training is the successful adoption of the Eurocodes, thus ensuring the Commission's objectives are met,
- Whom should promotion be aimed at? The paper recommends all Member States of EU and EFTA, Acceding and Candidate Countries, the rest of Europe and particular countries outside the Europe,
- A Strategy - Elements of Promotion, key ingredients of which are an awareness campaign and a programme for "Training the Trainers",
- A Strategy - Programme of Work, where key activities are identified and scheduled.

The paper concludes that, to achieve a successful strategy plan, the following identified activities are essential:

- To organize an awareness campaign,
- To continually update the Website,
- To produce "User-friendly" leaflets and booklets,
- To organise a "Training the Trainers" programme for knowledge transfer and consistency,
- To organize meetings and workshops where National events and training will be encouraged,
- To organize a conference in Brussels to mark the EN Eurocodes Era (political/policy oriented).

The document provides an Appendix 1, which gives for each identified activity a target date and involved organizations.

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1 Introduction

This paper proposes a strategic plan for training and promotion of the EN Eurocodes in accordance with the Commission Recommendation of 11 December 2003 on the implementation and use of Eurocodes for construction works and structural construction products.

The strategic plan includes two main activities and the corresponding materials, namely: (i) An awareness campaign; (ii) Education, training and continuing professional development and (iii) Promotional and technical guidance materials.

The background to the proposed Strategy is summarized in Section 2 – Principal objectives of the Eurocodes in relation to the EU legislation, and the Commission Recommendation is revisited in Section 3, in particular its recommendation 7 on promotion, education and training.

The objectives and reasons for promotion are reviewed in Section 4 and the different communities, groups, States and geographic regions for promotion and training are identified in Section 5.

Section 6 gives details on the elements of promotion. Section 7 delineates a programme of work with key activities to achieve the goal of effective implementation and use of the Eurocodes in the EU and abroad.

This document was prepared in the framework of the Administrative Arrangement between DG ENTR and JRC and builds on the co-operation between CEN/TC250 – Evolution Group and the JRC as well as on the discussions with EU experts and on the conclusions of the Enlargement Workshop held in Ispra in November 2005 (see the Bibliography).

2 Principal Objectives of the Eurocodes in Relation to EU Legislation

The Eurocodes are intended to serve as reference documents to be recognised by authorities of the EU and EFTA Member States for the following purposes:

- i. As a means of compliance of building and civil engineering works with the Essential Requirements (ERs) as set out in Council Directive 89/106/EEC (The Construction Products Directive), particularly ER No 1 - Mechanical resistance and stability and part of ER No 2 – Safety in case of fire.
- ii. As a basis for specifying contracts for the execution of construction works and related engineering services in the area of public works (relates to EU Directives on Public Procurement).
- iii. As a framework for drawing up harmonised technical specifications for construction products (relates to Guidance Paper L).

3 Commission Recommendation to Member States on Implementation

The seven Commission recommendations to the Member States are summarised below:

- 1) To adopt Eurocodes for designing construction works,
- 2) To select NDPs for their territory,
- 3) To use the recommended values for the NDPs, unless divergence is essential,
- 4) To compare NDPs, assess the impact on any technical differences and reduce divergence,
- 5) To refer to Eurocodes in their provisions on structural construction products,
- 6) To undertake, in collaboration, appropriate research relating to Eurocodes ensuring an ongoing increased level of protection,
- 7) To promote instruction on the use of the Eurocodes.

3.1 Recommendation 7 on Promotion

In particular, recommendation 7 of the Commission Recommendation of 11 December 2003 states that:

“Member States should promote instruction in the use of the Eurocodes, especially in engineering schools and as part of continuous professional development courses for engineers and technicians”.

However, a more comprehensive promotion campaign is required to ensure that all the 7 recommendations are implemented (for example: transfer of knowledge from code makers and training quality and consistency).

4 Objectives and Reasons for Promotion

4.1 Principal objectives of promotion

Promoting the Eurocodes would help the early and successful adoption of the Eurocodes, thus ensuring three key objectives:

- Firstly, the Commission's objectives for the Eurocodes with regard to the removal of barriers to trade (see 2 i) and 2 iii)),
- Secondly, giving advantages to the European Construction Industry, and
- Thirdly, safety of the public in the built environment and the security of the citizen.

4.2 Reasons for promotion

(a) Removal of barriers to trade

In relation to 2 i) and 2 iii), the removal of barriers to trade will improve the functioning of the single market for products and engineering services by removing obstacles arising from different nationally codified practices for the assessment of structural reliability.

(b) Competitiveness of the European Construction Industry

The implementation of the harmonised EN Eurocodes in the whole of the EU and EFTA will help the Eurocodes become established as global codes of practice in construction. This will improve the competitiveness of the European construction industry and the professionals and industries connected to it in countries outside the European Union.

Currently many countries in the EU enjoy a considerable advantage in the supply of design services and associated product supplies arising from historic adoption of European codes and standards across much of the Countries historically linked to European States and wider. This advantage is also due to a "sympathetic" environment arising from the many professionals who have been educated in Europe and trust the independence and quality of our specification processes and who are now in positions of influence.

Despite of the strong efforts of the USA in promoting their building codes, the introduction of CEN standards gives to third countries currently accepting European codes and standards (e.g. BSI, AFNOR) the opportunity to review their policy and allegiances. It is however naïve to underestimate the positive effort required by both the EU and those Member States currently enjoying considerable trade advantages, if Europe is not to loose out to trading competitors (e.g. USA) during this changeover.

(c) Safety

The Eurocodes establish principles and requirements for achieving safety, serviceability and durability of structures in the Member States of EU and EFTA, and its rules are backed by a large catchment of expertise, thus helping the concerns and objectives of EU Member States for the safety of people in the built environment.

The following sections (5-7) will identify the means these objectives can best be achieved.

5 Whom Should Promotion be Aimed at?

Promotion should be aimed at the appropriate National Authorities, the Construction Industry and those involved with it in:

- 1) Member States that have been involved in the preparation of the EN Eurocodes,
- 2) New Member States that have recently joined the EU and had not been directly involved in the preparation of the EN Eurocodes,
- 3) Acceding Countries, Candidate Countries and the rest of Europe.
- 4) Countries outside Europe who are existing or potential partners for construction products and materials and for construction and engineering services, and where the adoption of the EN Eurocodes will be to the advantage of the European Construction Sector.

6 Strategy - Elements of Promotion

6.1 Awareness campaign

Key to promotion is to increase the awareness of the National Authorities, the Construction Industry and those that influence it, on the importance of the Eurocodes and the benefits emanating from their use. The awareness campaign should comprise the following elements:

- 1) Awareness events and documents for dissemination, which have to be easily understood and “jargon free”, on the needs and advantages of implementation should be arranged and encouraged nationally and internationally (i.e. in Europe and the rest of the World).
- 2) Universities should be made aware of the Eurocodes, and of the fact that graduates trained in Eurocodes will help ensure the EU’s objectives.
- 3) A conference should be organized in Brussels to mark the EN Eurocodes Era (political/policy oriented), in 2007.
- 4) Technical conferences should be organized in cooperation with international associations on the application of the Eurocodes (e.g. FIB, IABSE, ECCS, JCSS, Int. Assoc. Geotechnics), in 2008.

6.2 Education, training and continuing professional development

In order to achieve satisfactory implementation of the Eurocodes, the construction industry and the professions who work in it must be ready to use the Eurocodes. Three levels of training will be needed depending on the audience, as follows:

- **Level 1** which will deal with policy of Eurocodes implementation, National Annexes, co-existence with National Codes, the Eurocodes system, etc. and these courses will be aimed at National Authorities, National Standards Bodies (NSBs) and senior personnel in the companies.
- **Level 2** which will be introductory courses to each individual Eurocode (average duration 1 day).
- **Level 3** which comprehensively describes design examples of a number of typical structures using a particular package of Eurocodes.

It is therefore required that

- 1) Technical training and continuing professional development courses be arranged and encouraged nationally and internationally (Level 1, Level 2, and Level 3).
- 2) Universities are encouraged to base their teaching of structural design on the Eurocodes.
- 3) Organise knowledge transfer from the Eurocode developers involved in training to potential National trainers of Eurocodes (Level 1 and Level 2).

6.3 Guidance material (Designer guides; Handbooks; Worked examples etc)

To achieve 6.1 and 6.2, guidance material on the existing “best practice” that overcomes any barriers to the practical implementation or use of EN Eurocodes for the design of construction works and manufactured structural components (construction products) should be disseminated. This guidance material should include:

- 1) Designer guides,
- 2) Worked examples of some common types of buildings and bridges,
- 3) Handbooks, manuals and design aids (practical tools),
- 4) Essential documents (with reduced scope e.g. non-dynamic sensitive buildings of up to six storeys),
- 5) Software and associated training.

This guidance has to be made accessible in all the Member States of the EU and EFTA, and in countries outside the EU in order to encourage better construction on a worldwide scale using construction products in conformity with the European Essential Requirements (using CE-marked products) by European construction and engineering services.

7 Strategy - Programme of Work

7.1 Awareness campaign

An important tool for increasing awareness is a website. JRC has already created a website for the promotion of the EN Eurocodes.

The following actions are needed (JRC with the support of CEN/TC250):

- 1) A website advisory group (3-5 Eurocode experts) should be formed in order to review the contents of the website as the state of implementation changes and the needs of the profession and Industry change.
- 2) Periodic Conferences/Workshops should be arranged for all Member States (for National Authorities and the construction Industry) on the implementation of the Eurocodes in the EU and EFTA, to include a specific session on awareness. The objective of this session is to implement best practice for awareness for all Member States. In addition, these workshops will provide an instrument for encouraging National events.
- 3) Listings (in the website) of key information leaflets on the use of Eurocodes and direct links to other information materials in the National and Industrial websites (e.g. the UK ODPM Green Book on the Eurocodes and the BSI Student's guide) should be included.
- 4) EC booklets and leaflets should be prepared for the Member States facilitating implementation and international promotion and including:
 - The objectives of the Eurocodes (i.e. CPD, procurement directives, international competition, barriers to trade, safety),
 - The benefits and challenges on using harmonised Eurocodes,
 - Explaining the European Standards and Approval System (ETAGs and the Eurocode system) including CE Marking,
 - The implementation, the National Annexes and their co-existence,
 - A brief introduction to EN 1990.

It is suggested that Member States translate these booklets and leaflets for use in their countries.

Separate booklets/leaflets will be needed for Industry and National Authorities.

- 5) Eurocode awareness events (covering the use of the Eurocodes, CEN standards, certification, CE Marking etc) to further the EU objectives on competitiveness, need to be organized when and where justified. Possible events may be considered together with the stakeholders in the following areas:
 - a. For Mediterranean Countries (Cyprus has offered to take the initiative),
 - b. For Balkan countries,
 - c. For Eastern and Central European countries,

- d. For Nordic Countries and the Baltic Countries,
- e. For Western European Countries,
- f. For China,
- g. For the Pacific rim,
- h. For the Indian sub-continent,
- i. Etc.

Regarding f), g) and h), the Commission with the Member States and Industry with strong links to particular overseas countries will be encouraged to stage events.

- 6) International co-operation agreements should be promoted and encouraged between:
 - a. Notified bodies (within the EU) and certification organizations abroad (outside of EU),
 - b. Laboratories, and
 - c. CEN members and NSBs outside CEN.
- 7) The holding of a conference in Brussels will be recommended to DG ENTR to mark the EN Eurocodes Era (political/policy oriented) (07/2007).

7.2 Education, training and continuing professional development

Training and continuing professional development courses should be organised.

JRC, with the support of CEN/TC/250, should:

- 1) Encourage seminars (awareness and implementation, etc) and training organized at National level in the Member States via the website and through JRC organised conferences/workshops.
- 2) Encourage the holding of National workshops and other European events relating to technical matters with the New Member States, Candidate and Acceding countries, who have not been involved in the development of the Eurocodes, via the website and JRC organised conferences/workshops.
- 3) Arrange “**Training the Trainers**” events whereby knowledge can be transferred from the appropriate experts and organizations, who have expertise on Eurocodes, to potential trainers in the EU and EFTA. This will ensure that knowledge held by individual experts is not lost.

7.3 Guidance material (Designer guides; Handbooks; Worked examples, etc)

- 1) CEN/TC250 should provide the JRC with all available background documents to any Part of the EN Eurocodes. The JRC will make these documents available through the website (when practicable) to NSBs and responsible specialists for preparation of training courses, university tuition, handbooks, design aids, software, etc. to facilitate the education, training and implementation of the EN Eurocodes.
- 2) The JRC should encourage collaboration, via the website and workshops, between the Member States on:
 - a) professional training programmes,
 - b) publication of designers guides and handbooks,
 - c) background research information,
 - d) calibration.

The Commission (DG ENL and DG ENTR) should consider the possibilities to provide channels and finances for collaboration between the Member States as appropriate and with Acceding and Candidate Countries.

- 3) Collect and publish/list/link in the website existing information and material (e.g. designer guides, handbooks, worked examples, etc.) relating to education and training.

8 Conclusions

To achieve a successful strategy plan for promotion addressed to National Authorities and Industry, the following identified activities are the most essential:

- to organize an awareness campaign,
- to continually update the website,
- to produce “User-friendly” leaflets and booklets,
- to organise “Training the Trainers” events for knowledge transfer and consistency,
- to organize meetings and workshops where National events and training will be encouraged,
- to organize a Conference in Brussels to mark the EN Eurocodes Era (political/policy oriented).

Appendix 1. Activities, target dates and involved Organizations/people

Activity	Target Date	Responsibility (Involved organisations/ people)
7.1 Awareness Campaign		
1) Form website advisory group (3-5 experts).	May 2006	JRC + ...
2) Arrange Periodic Conferences/Workshops for all Member States (for National Authorities plus Industry) on implementation in the EU, to include a specific session on awareness.	Annually starting with November 2006	JRC
3) Listings (in the website) of key information leaflets on the use of Eurocodes and direct links to other information materials in the National and Industrial websites.	Continuing activity by JRC	JRC
4) Preparation of EC booklets and leaflets for EU Member States encouraging implementation, explaining benefits and challenges of using Eurocodes, explaining the European Standards and Approval System (ETAGs and the Eurocode system) including CE Marking.	June 2006	JRC
5) Eurocode awareness events to further the EU objectives on competitiveness. Possible events may be considered together with the stakeholders in the following areas: a) For Mediterranean Countries b) For Balkan countries c) Eastern and Central European countries, d) For Nordic Countries and the Baltic Countries e) For Western European Countries; f) China, g) the Pacific rim, h) the Indian sub-continent i) Etc.	a) to e) 2006-2008	JRC Plus CEN TC250, Member States, Industry
	f), g), and h) as practicable, starting in 2006	European Commission (Member States Industry with strong links to particular oversees countries)
6) International co-operation agreements should be promoted and encouraged between a) Notified bodies (within the EU) and certification organizations abroad (outside of EU); b) Laboratories; and c) CEN members and NSBs outside CEN	Continuous activity	European Commission (Notified bodies, EOTA with the help of National Authorities and experts)
7) Recommend to DG ENTR the holding of a conference in Brussels to mark the EN Eurocodes	To be discussed/ agreed with DG	DG ENTR, CEN/TC250, JRC

Activity	Target Date	Responsibility (Involved organisations/ people)
Era (political/policy oriented)	ENTR	
7.2 Education, training and continuing professional development		
1) Encourage seminars (awareness and implementation, etc) and training organized at National level in the Member States.	Continuing	JRC website and conference described in 7.1 2, Member States
2) Encourage workshops and other European events relating to technical matters with the New Member States, Candidate and Acceding countries, who have not been involved in the development of the Eurocodes.	Continuing	JRC website and conference described in 7.1 2, Member States
3) Arrange “ Training the Trainers ” events, whereby knowledge from the developers of the Eurocodes can be transferred to university personnel and trainers in the EU and EFTA. This will ensure that knowledge held by individual experts is not lost.	March 2008, but planning begins April 2007.	JRC with TC250
7.3 Guidance material (Designer guides; Handbooks; Worked examples etc)		
1) Provide JRC with all available background documents to any Part of the EN Eurocodes. The JRC will make these documents available through the website (when practicable) to NSBs and responsible specialists.	Starting at April 2006	CEN/TC250, JRC
2) Encouraging the collaboration between the Member States, on: <ul style="list-style-type: none"> a) professional training programmes b) publish designers guides, handbooks, c) background research information, d) calibration. The Commission (DG ENL and DG ENTR) should consider the possibilities to provide channels and finances for collaboration between Member States as appropriate and with Acceding and Candidate Countries.	Continuing	JRC through the ENC Group and CEN/TC250
	April 2006	DG ENL and DG ENTR

Note: See Section 7 for a fuller explanation of “Activities”

Bibliography

The following documents have been referred to:

- Commission Recommendation of 11 December 2003 on the implementation and use of Eurocodes for construction works and structural construction products,
- European Commission - Guidance Paper L (concerning the CPD – 89/106/EEC) Application and Use of Eurocodes,
- CEN/TC250: N630: Evolution of Eurocodes,
- Workshop on the Adoption of the Eurocodes in the EU New Member, Acceding and Candidate Countries' JRC, Ispra, November 7-9, 2005, Conclusions & Recommendations.

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Abstract

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- To organize a conference in Brussels to mark the EN Eurocodes Era (political/policy oriented).

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